

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2016

WEDNESDAY, MARCH 11, 2015

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 9:04 a.m., in room SD-138, Dirksen Senate Office Building, Hon. Lamar Alexander (chairman) presiding.

Present: Senators Alexander, Lankford, and Feinstein.

DEPARTMENT OF ENERGY

NATIONAL NUCLEAR SECURITY ADMINISTRATION

**STATEMENT LIEUTENANT GENERAL FRANK G. KLOTZ, U.S. AIR FORCE
(Retired), UNDER SECRETARY FOR NUCLEAR SECURITY AND AD-
MINISTRATOR**

ACCOMPANIED BY:

**DR. DONALD COOK, DEPUTY ADMINISTRATOR FOR DEFENSE PRO-
GRAMS**

**ANNE HARRINGTON, DEPUTY ADMINISTRATOR FOR DEFENSE NU-
CLEAR NONPROLIFERATION**

**ADMIRAL JOHN RICHARDSON, UNITED STATES NAVY, DIRECTOR,
NAVAL NUCLEAR PROPULSION, DEPUTY ADMINISTRATOR FOR
OFFICE OF NAVAL REACTORS**

OPENING STATEMENT OF SENATOR LAMAR ALEXANDER

Senator ALEXANDER. The Subcommittee on Energy and Water will please come to order. This morning, we're having a hearing to review the President's fiscal 2016 budget request for the National Nuclear Security Administration.

Senator Feinstein and I will each have an opening statement. I will then recognize each Senator who comes for up to five minutes for an opening statement, alternating between the majority and the minority in the order that they arrive. We will then turn to witnesses for their testimony. General Klotz will present testimony on behalf of the entire NNSA and we'll include the full written statements of all the witnesses in the record. Senators will then be recognized for five minutes each, alternating between the minority and majority in the order that they arrive.

First, I would like to thank our witnesses for being here, and also Senator Feinstein, who I will be working with to draft the appropriations bill for funds for the NNSA. Our witnesses today include Lieutenant General Frank Klotz, Administrator of the NNSA,

Dr. Donald Cook, Deputy Administrator for Defense Programs, Ms. Anne Harrington, Deputy Administrator for Defense Nuclear Non-proliferation, and Admiral John Richardson, Deputy Administrator for Naval Reactors.

We're here today to review the President's fiscal year 2016 budget request for NNSA, which is a semiautonomous agency within the Department of Energy that's responsible for managing our nuclear weapons stockpile, reducing global dangers posed by weapons of mass destruction, and providing the Navy with safe and effective nuclear propulsion. This is the subcommittee's third hearing this year on the President's budget request, and I look forward to hearing our witness testimony.

The NNSA has an important national security mission, but it faces many challenges. That's why we need to do what we can to—what we were sent here to do, and that is to govern. Governing is about setting priorities, and we are going to have to make some hard decisions this year to make sure the highest priorities are funded. The President's 2016 budget request for defense spending is nearly \$38 billion higher than what is allowed under the spending caps in the Budget Control Act. In fact, spending this year is consistent with the Budget Control Act fully funding, and NNSA's budget request alone would require almost the entire increase in defense spending for all defense programs, including the Department of Defense.

We will work with Senator Cochran and Senator Mikulski to increase the subcommittee's defense spending allocation, but we're going to need your help to understand the NNSA's most urgent priorities, and that's why we're holding this hearing. I would like to focus my questions on three main areas, all with an eye toward setting priorities. First, keeping large construction projects on time and on budget. Senator Feinstein and I have worked pretty hard on that. Two, effectively maintaining our nuclear weapons stockpile. And three, properly supporting our nuclear Navy.

The first one: keeping the large construction projects on time and budget. NNSA is responsible for three of the largest construction projects in the Federal Government: the uranium processing facility in Tennessee, the MO_x fuel fabricating facility in South Carolina, and the plutonium facility in New Mexico. Combined, these projects could cost as much as \$20 billion to build. Over the past 4 years, Senator Feinstein and I have worked hard with the NNSA to keep costs from skyrocketing and to make sure hard earned taxpayer dollars are spent wisely. We need to make sure these projects are on time and on budget.

Senator Feinstein and I have focused much of our oversight on the uranium processing facility, because costs had increased every time we would get a status update. Three years ago, we began holding regular meetings with the NNSA administrator and his team. We said we wanted 90 percent design completed before we begin construction. We urge the NNSA to take aggressive steps to get costs under control.

The administrator asked Thom Mason, the laboratory director for the Oak Ridge National Lab in Tennessee to have a Red Team to review the project. The result is that review may be a model for how to keep these kinds of projects on time and on budget. The Red

Team's report included 17 recommendations, nearly all of which the NNSA has now adopted to keep the uranium facility within a \$6.5 billion budget with completion by 2025.

Based on these recommendations, the uranium facility will now consist of at least two buildings, one with high security, one with less security, with construction of these buildings to begin once their design is at 90 percent. As I understand it, NNSA recently completed a portion of the site preparation for this project under budget by \$10 million. That is a good start, and I'm sure I will hear more about that in a few minutes, but there's a lot more work to do.

I'm going to ask you more today about the uranium facility, particularly about your schedule for completing the design and when you anticipate construction can begin. I also want to ask you about how you are applying the lessons we learned from the Red Team review there to other big construction projects, and look forward to any updates that you may be able to provide.

General Klotz, I know you're planning to go to Tennessee tomorrow to see the progress. I appreciate your hands on approach to making sure this project is delivered on time and on budget.

Now on our nuclear weapons, another large portion of the budget request is the work NNSA is doing to maintain our nuclear weapons stockpile. I want to make sure we're spending those dollars effectively. The budget request includes \$1.3 billion to continue the four ongoing life extension programs which fix or replace components in our weapons system to make sure they are safe and reliable. These life extension programs are needed, but they are very expensive, and I'll ask you today whether you will be able to meet your production deadlines on time and on budget.

And our Navy, Naval Reactors is responsible for all aspects of the nuclear reactors that power submarines and aircraft carriers. Naval Reactors is currently designing a new reactor core that will not need to be refueled during the life of the ship. This work will save taxpayers billions of dollars, because it won't have to build two extra submarines to make up for those that are not in service when they are not being refueled. The small nuclear reactors that Naval Reactors designs have had an impeccable safety record. For more than 60 years, there has never been a reactor accident resulting in a death. Also, want to hear more about your plans for storing the Navy's used nuclear fuel.

We talked a lot in our hearing last week with the Nuclear Regulatory Commission about Yucca Mountain storing used nuclear fuel from commercial reactors, and I would like to hear from you how this issue impacts your operations.

With that, I would recognize Senator Feinstein for her statement.

STATEMENT OF SENATOR DIANE FEINSTEIN

Senator FEINSTEIN. Thanks very much, Mr. Chairman. And I don't need to say what a pleasure it is to work with you. I was listening to your opening statement and thinking about how parallel our concerns are, and the meetings that we have had in the last 3 years to try to see that the management of these projects is more efficient and effective. And I think now, with this new secretary,

we are beginning to make some progress. And so I so appreciate your leadership and our partnership. It's very special.

This is a big increase. It is \$1.2 billion over enacted 2015 levels. I just reached back and asked the staff, and asked the question, have they ever gotten an increase this big? And the answer was, well certainly not in the last 4 or 5 years. So I think this increase really portends some danger for the nuclear program.

I was looking at the CBO report, which points that out. Now, this is the projected costs of the United States nuclear forces 2015 to 2024. But as you know, the increase just there is \$348 billion, according to CBO, and that is an average of \$35 billion a year. I think we have very bright people at this table, and in terms of what you say, I would really like to know, what are we going to do to handle this? And I know there are programs going on to handle it, so if you could put some of those out on the table that we could take a look at them, that would be very appreciated.

NNSA is currently undertaking three multibillion-dollar projects to modernize nuclear weapons infrastructure and recycle nuclear weapons material for peaceful use. The chairman talked about them, UPF in Tennessee, CMRR in New Mexico, and MO_x in South Carolina. These projects have all seen large increases in their estimated costs as well as schedule delays. In response, the NNSA has taken a step back to re-examine capability needs and alternative approaches.

For example, Los Alamos has developed an incremental smaller scale approach to modernizing plutonium production infrastructure, and the Secretary of Energy has rightly made improving project management, as the chairman stated, more broadly a focus of his tenure in the Department. I view these all as very positive steps, but a lot of uncertainty remains.

Two of these projects, CMRR and UPF, are still in their initial phases. Even though CMRR will expand use of one building and reuse another, NNSA may also require the addition of several modules for plutonium production with an as yet unspecified cost and schedule. The cost and schedule for UPF are still being developed and are expected later next year.

So I hope, Mr. Chairman, that we can have some meetings when these costs are known, so that we can take a look at them and see how we are going to handle them in the future years.

In fiscal year 2015, \$715 million was provided to these three projects. In fiscal year 2016, budget request increases by \$215 million, for a total of \$931 million. So if you add up the fact that smaller projects, or recapitalization efforts, totals \$117 million and \$362 million respectively, we get that \$1.3 billion figure, and it's huge. The request for life extension programs is that \$1.3 billion, a \$226 million increase over 2015. Now, that is going to grow.

Last week, the chairman of the Nuclear Weapons Council, Frank Kendall, testified before the Senate Armed Services Committee, and he said this. In 2021, we are going to start having a problem finding ways to afford these systems. And I think that is probably correct, and I think we have to come to grips with that, and as a team, hopefully, be able to make some decisions which can understand that we don't know where we are going to be financially at that time.

Let me call attention to two specific issues. Despite a \$1.2 billion increase for NNSA, the science function within the weapons activities account sees virtually no increase in the President's budget request. With the end of explosive testing of nuclear weapons, a science-based approach is the foundation of our stockpile stewardship activities. Even with the science function in this budget request, science and engineering are cut in favor of computing and advanced manufacturing, and I think we must maintain a robust science and engineering capability.

Second, the defense nuclear nonproliferation account sees a modest increase over last year. This is positive. But at a comparable level, at \$1.7 billion in 2016, nonproliferation funding is still down, from \$1.9 billion in 2014 and its high of \$2.3 billion in 2012. So I have always thought the nonproliferation program was very vital, and I see it's on a downward slope. The Megatons to Megawatts Program is just one example. Ten percent of all U.S. electricity until 2019 will be from former nuclear weapons. Also, NNSA has so far removed or confirmed the disposition of 5,207 kilograms of highly enriched uranium and plutonium around the world.

Some in Congress and elsewhere want to use the current tension with Russia to walk away from the leadership role our country has taken with regard to reducing proliferation requests. I disagree with that decision. NNSA's nonproliferation program will play a critical role in securing materials around the world, helping with peaceful use of nuclear power in developing countries, and fostering and monitoring United States nuclear technology exports. In an increasingly complex world, efforts to reduce nuclear risks deserve funding and support.

So Mr. Chairman, thank you for holding this hearing. I look forward to hearing General Klotz's statement and our conversation that we will have this morning. So thank you very much.

Senator ALEXANDER. Thank you, Senator Feinstein. And let me say, as I have said many times before, how much of a privilege it is just to work with you. It makes life a lot easier, when we are approaching big, difficult problems, to have a level of trust and an interest in good management.

General Klotz, at this time, we will turn to you for your testimony on behalf of NNSA, and after that, we will have questions for you and the other witnesses. Welcome.

SUMMARY OF LIEUTENANT GENERAL FRANK G. KLOTZ

General KLOTZ. Chairman Alexander, Ranking Member Feinstein, thank you for the opportunity to present the President's fiscal year 2016 budget request for the Department of Energy's National Nuclear Security Administration.

I'm pleased to be joined by, as you recognized, Dr. Don Cook, Ms. Anne Harrington, and Admiral John Richardson. We had provided a written statement, and I appreciate your direction that it be placed into the record.

We certainly value this Committee's strong leadership in national security as well as its robust and abiding support for the mission and the people of the NNSA. Our budget request, which comprises more than 40 percent of DOE's budget, is \$12.6 billion.

This is, as has been pointed out, an increase of \$1.2 billion, or about 10.2 percent over the fiscal 2015 and active level.

This funding is extraordinarily important to NNSA's important and enduring missions, to maintain a safe, secure, and effective nuclear weapons stockpile without testing, to prevent, counter, and respond to the threat of nuclear proliferation and terrorism, and to support the capability of our nuclear powered Navy to project power and to protect American interests around the world.

By supporting growth in all four of our appropriations accounts, this budget request represents a commitment by the Administration to NNSA's vital and enduring mission and NNSA's role in ensuring a strong national defense. This mission is accomplished through the hard work and innovative spirit of a very highly talented workforce, all of whom are committed to public service. To provide them the tools that they need to carry out their complex and challenging tasks, both now and in the future, we must continue to modernize our scientific, technical, and engineering capabilities and infrastructure. In doing so, we are mindful of our obligation to continually improve our business practices and to be responsible stewards of the resources that Congress and the American people have entrusted to us.

To this end, NNSA continues to make progress on key surveillance and life extension programs, which directly support the President's direction to maintain a safe, secure, and effective nuclear arsenal, and funding at the 2016 budget request level will ensure that these key life extension program stay on track.

For NNSA's important mission to reduce nuclear dangers across the world, the fiscal year 2016 budget request shifts funding for our counterterrorism and emergency response missions into the defense nuclear nonproliferation account in order to better align our funds across the spectrum of activities, which run from preventing, to countering, to responding to global nuclear dangers. Additionally, the nonproliferation programs have also been realigned into for business lines that better reflect the core competencies resident across that program in our labs and in our production facilities.

And finally, the request for our Naval Reactors mission provides funding for three major initiatives, the Ohio-Class Reactor Plant System Development, the Land Based S8G Prototype Refueling Overhaul, and the Spent Fuel Handling Recapitalization Project in Idaho.

For all these missions, NNSA will continue to drive improvements in the acquisition and project management practices and policies as well as ensuring Federal oversight across the enterprise. These highlights are just a hand full of the critical national security work that this budget funds. However, as you pointed out, the looming possibility of sequestration is a major threat to carrying out all of these missions. In developing the budget, NNSA was directed to request the funds that we need to accomplish the missions that we have been tasked to do, and this fiscal year 2016 budget request reflects this direction.

Another round of sequester cuts would most certainly have a devastating impact on important programs and projects, including pushing them further out into the future or perhaps having to cancel some altogether. It would also have grave implications for the

science, technology, and engineering work that is taking place at our laboratories and plans, work that underpins our nuclear security but also the broader national security.

Again, Mr. Chairman, Ranking Member Feinstein, thank you for the opportunity to appear before you today. And we are looking forward to answering any questions that you may have.

[The statement follows:]

PREPARED STATEMENT OF LIEUTENANT GENERAL FRANK G. KLOTZ

Chairman Alexander, Ranking Member Feinstein, and Members of the Subcommittee, thank you for the opportunity to present the President's fiscal year 2016 Budget Request for the Department of Energy's (DOE) National Nuclear Security Administration (NNSA). We value this Committee's leadership in national security, as well as its strong and abiding support for the mission and people of the NNSA.

The President's fiscal year 2016 Budget Request for NNSA, which comprises more than 40 percent of the DOE's budget, is \$12.6 billion, up \$1.2 billion or 10.2 percent over the fiscal year 2015 enacted level. The NNSA has a unique and special responsibility for maintaining a safe, secure, and effective nuclear weapons stockpile for as long as nuclear weapons exist; preventing, countering and responding to evolving and emerging threats of nuclear proliferation and terrorism; and, supporting the capability of our nuclear-powered Navy to project power and protect American and Allied interests around the world. By supporting growth in each of our four appropriations accounts, this budget request represents a strong endorsement of NNSA's vital and enduring mission, and is indicative of the Administration's unwavering commitment to a strong national defense.

The NNSA's mission is accomplished through the hard work and innovative spirit of a highly talented workforce committed to public service. To provide them the tools they need to carry out their complex and challenging task, both now and in the future, we must continue to modernize our scientific, technical and engineering capabilities and infrastructure. In doing so, we are mindful of our obligation to continually improve our business practices and to be responsible stewards of the resources that Congress and the American people have entrusted to us. The NNSA took several significant steps toward this objective during the past year.

NNSA's fiscal year 2016 Budget Request reflects the close working partnership between NNSA and the Department of Defense (DOD) in providing for our Nation's nuclear deterrence capabilities and modernizing the nuclear security enterprise. As in last year's Budget, DOD is carrying a separate account in its fiscal year 2016 Budget Request for the out years, fiscal year 2017 and beyond, which identifies funds for NNSA's Weapons Activities and Naval Reactors. We urge this Subcommittee's support for alignment of its appropriations process and national defense or "050" allocations, including the subcommittee 302(b) allocations, with the President's Budget. The requested allocation supports NNSA and DOD priorities.

Tough decisions and trades in fiscal year 2016 have been made to meet military commitments and nuclear security priorities. If the request is not fully supported, modernization of our nuclear enterprise and implementation of our long-term stockpile sustainment strategy could be put at risk. The program we have proposed is highly integrated and interdependent across the stockpile management, science and infrastructure accounts.

Apart from the need for national defense allocation alignment, the looming possibility of sequestration is a major threat to all NNSA missions. The NNSA fiscal year 2016 Budget Request exceeds the caps set on national security spending in the Budget Control Act (BCA); but is necessary to meet our national security commitments. Reduced funding levels will place these commitments at risk. We have made some tough resource decisions across the NNSA, but the Secretary of Energy and I believe that our enduring missions are too vital to the Nation's security to be further constrained by the current BCA spending caps.

Details of the fiscal year 2016 President's Budget Request for the NNSA follow: Weapons Activities Appropriation

The fiscal year 2016 Budget Request for the Weapons Activities account is \$8.8 billion, an increase of \$666.6 million or 8.1 percent over fiscal year 2015 enacted levels. It is comprised not only of the Defense Programs portfolio, which is responsible for all aspects of stockpile stewardship and management; but also the enterprise-wide infrastructure sustainment activities managed by our Office of Safety, Infrastructure and Operations, as well as our physical and cybersecurity activities. It should be noted that in this budget request we have moved NNSA's on-going emer-

agency response and counterterrorism and counterproliferation capabilities out of the Weapons Activities account and into the Defense Nuclear Nonproliferation account. This action aligns activities for preventing, countering and responding to global nuclear threats into a single account.

MAINTAINING THE STOCKPILE

Last year, we again successfully used science-based stockpile stewardship to certify to the President that the American nuclear weapons stockpile remains safe, secure, and effective-without the need for underground nuclear testing. It is important to periodically remind ourselves that we have been able to do this every year largely due to the investments we have made and continue to make in state-of-the-art diagnostic tools, high performance computing platforms, and modern facilities staffed by extraordinarily talented scientists, engineers and technicians.

For Directed Stockpile Work (DSW), the fiscal year 2016 request is \$3.2 billion, a \$494.7 million increase over fiscal year 2015 enacted levels, or about 18.4 percent. Approximately \$133 million of this increase reflects a restructuring of the accounts when compared to the fiscal year 2015 budget request. These changes are discussed below.

With respect to the major life extension programs (LEP), we have now passed the halfway mark in the production phase of the W76-1 LEP. This LEP, which directly supports the Navy, is now on track and on budget. Our fiscal year 2016 Request of \$244.0 million will keep us on track to complete production in fiscal year 2019.

We are also making significant progress in the engineering development phase of the B61-12 LEP. The B61 is a gravity bomb associated with Air Force long-range nuclear-capable bombers, as well as dual-capable fighter aircraft. Working with the Air Force, we successfully completed environmental flight tests on the F-15, F-16, and B-2 aircraft on or ahead of schedule. The B6112 LEP will enter Phase 6.4 Production Engineering in 2016; and, with the \$643.3 million requested, we will remain on track to deliver the First Production Unit (FPU) in fiscal year 2020.

Based on results from the ongoing surveillance of the nuclear weapons stockpile performed by NNSA's laboratories and plants, the Nuclear Weapons Council decided that it was prudent to expand the planned W88 Alteration (ALT) 370 to now include replacement of the conventional high explosive in the warhead. The budget request reflects this decision and includes \$220.2 million to support the FPU in fiscal year 2020.

The budget request also includes \$195.0 million to support the Nuclear Weapons Council decision to accelerate by 2 years an LEP of the W80 to serve as the warhead for the Air Force's Long Range Stand-Off system (LRSO). FPU is now slated for 2025.

This budget request also supports our goal of dismantling all weapons retired prior to fiscal year 2009 by fiscal year 2022. In fact, we have already dismantled more than 42 percent of these weapons in 38 percent of the time allotted. This funding will ensure that we stay on track to meet our dismantlement commitment.

Within DSW, the budget request also includes \$415.0 million for a new "Nuclear Materials Commodities" subprogram to support the investment needed in nuclear materials to maintain the viability of the enduring stockpile. Included in this subprogram are Uranium Sustainment, Plutonium Sustainment, and Tritium Sustainment which are all crucial to sustain our stockpile, even as we move to lower levels in our nuclear stockpile. Since last year, we have created and empowered new program manager positions to oversee each of these nuclear materials programs. Also included within DSW, is a subprogram for Domestic Uranium Enrichment. Ensuring we have a domestic uranium enrichment capability for national security needs is particularly important in maintaining a domestic source of LEU to produce tritium and for research reactor conversion program and eventually to produce HEU for Naval Reactors fuel.

Consistent with the Consolidated and Further Continuing Appropriations Act for fiscal year 2015, activities formerly carried out under Campaigns are now included under Research, Development, Test, and Evaluation (RDT&E). The funding request for RDT&E is about \$1.8 billion, essentially the same as the fiscal year 2015 enacted level. This includes \$623.0 million for the Advanced Simulation and Computing (ASC) Program, an increase of \$25.0 million for the Advanced Technology Development and Mitigation (ATDM) subprogram that supports high performance computing; \$130.1 million for Advanced Manufacturing Development, an increase of \$22.9 million. This funding will support work related to electronics-based arming, fusing, and firing, as well as other technologies that require significant technical effort to ensure production readiness for manufacturing technologies needed to replace sunset technologies. We continue to develop and mature additive manufacturing

technologies that can provide significant cost avoidance by reducing costs to prototype and manufacture tooling and certain weapons components. These increases are largely offset by relatively small decreases in the Science (–\$22.5 million for a total request of \$389.6 million), Inertial Confinement Fusion Ignition and High Yield Program (–\$10.4 million for a total request of \$502.5 million), and Engineering (–\$4.6 million for a total request of \$131.4 million) Programs.

The Inertial Confinement Fusion Ignition and High Yield program has spearheaded ongoing improvements in both management and operational efficiencies at NNSA's major high energy density (HED) facilities, including the National Ignition Facility (NIF) at Lawrence Livermore National Laboratory (LLNL). As a result of these improvements, LLNL has been able to increase the shot rate at NIF. NNSA recently completed a 10-year HED Science Strategic Plan to guide work in this important field.

Partnering with the DOE Office of Science, NNSA continues to make much needed investments in exascale computing. NNSA's ASC Program provides leading edge, high-end modeling and simulation capabilities to sustain and modernize the stockpile today and into the future. The fiscal year 2016 Request includes \$64 million for the ASC's Advanced Technology Development and Mitigation subprogram to pursue long-term simulation and computing goals relevant to the exascale computing needed to support the broad national security missions of the NNSA. Both the NNSA and DOE's Office of Science continue to collaborate with the Office of Science providing \$209 million towards the development of capable exascale systems.

Defense Programs also supports the vitality of the broader National Security Enterprise. An important aspect of this is investing in Laboratory-, Site- and Plant-Directed Research and Development (LDRD). Independent reviews have consistently affirmed the importance of the program to the long-term vitality of the labs. LDRD provides basic research funding to foster innovation and to attract and retain young scientific and technical talent. Congressional support is essential to sustaining this essential national capability.

Finally, another important accomplishment within Weapons Activities in 2014 was the renewal of the Mutual Defense Agreement with the United Kingdom. Since 1958, this enduring agreement has enabled mutually beneficial exchange of nuclear expertise between the United States and UK, contributing to a long and proud history of defense cooperation between our two Nations. In this case, the Administration and the Congress worked closely together to achieve a shared goal. We are truly grateful for your support.

IMPROVING SAFETY, OPERATIONS AND INFRASTRUCTURE

In order to support all of these critical programmatic activities, we are making important strides in recapitalizing our aging infrastructure throughout the enterprise. In August 2014, DOE and NNSA formally dedicated the new National Security Campus (NSC) in Kansas City, Missouri. The former Kansas City Plant was relocated from the Bannister Federal Complex, a 70-year-old facility, to the NSC with half the footprint and a modern operating environment. The move was safely and securely completed 1 month ahead of schedule and \$10 million under budget. The NSC manufactures or purchases 85 percent of the non-nuclear components that make up our nuclear weapons, and thus plays a major role in keeping the Nation's nuclear stockpile safe, secure and effective.

The fiscal year 2016 request restructures many of the activities formerly conducted under the Readiness in Technical Base and Facilities (RTBF) into the Infrastructure and Safety program. This new program will maintain, operate and modernize the NNSA general purpose infrastructure in a safe, secure, and cost-effective manner. Infrastructure and Safety efforts are organized around five elements—Operations of Facilities; Safety Operations; Maintenance; Recapitalization; and, Line Item Construction. Together, these elements provide a comprehensive approach to arresting the declining state of NNSA infrastructure. The fiscal year 2016 request for Infrastructure and Safety is \$1.5 billion and reflects an increase of \$79.4 million for comparable activities from the fiscal year 2015 enacted level. This funding will allow NNSA to modernize and upgrade aging infrastructure and address safety and programmatic risks.

We are developing a 10-year strategic plan that identifies the activities NNSA is undertaking to arrest the declining state of NNSA infrastructure, reduce Deferred Maintenance (DM), and dispose of excess facilities. The major elements of the plan include improving infrastructure decisionmaking with implementation of new, risk-informed analytical methods to better evaluate the ability of an asset to support program core capabilities; improving program management tools through implementation of standardized and automated processes and systems for scope, cost, and

schedule management; accelerating recapitalization and construction efforts to revitalize infrastructure and make better use of the resources by strategically procuring common systems and components used across the enterprise; and shrinking the NNSA footprint by deactivating and disposing of excess facilities, with increased focus on timely deactivation and on repurposing and reuse as a strategy to avoid new construction. Within this 10-year plan, the transferring of the old Kansas City Bannister Road facility to a private developer to repurpose the site for local community use will eliminate \$250 million in DM. We recognize that these goals will not be met quickly, and that arresting the declining state of NNSA infrastructure will require steady commitment at all levels of the organization over many years. We believe that the tools and processes we are developing and implementing, along with sustained investment in our infrastructure, will set NNSA on the right path to ensuring a viable, safe, and effective nuclear security enterprise well into the future.

The Infrastructure and Safety program addresses the needs of program specific infrastructure, primarily the Uranium Processing Facility (UPF) and the Chemistry and Metallurgy Research Replacement (CMRR) project. RTBF provides a defined level of readiness and capability through infrastructure investments and strategy development that are dedicated to special nuclear material processing and inventory management. The RTBF program accomplishes this mission by modernizing stockpile stewardship and management infrastructure through capability investments, strategic development, and line-item construction projects for the sustainment or enhancement of capabilities. The fiscal year 2016 request is \$1.1 billion, with a reduction of \$1.4 billion, due to the transfer of select activities to Infrastructure and Safety. For comparability purposes, the fiscal year 2016 request for RTBF is increased more than 50 percent to support a new source of high-purity depleted uranium, to realign recapitalization of Defense Programs capabilities through the Capabilities Based Investments (CBI), and to increase funding for the UPF at Y-12 to \$430.0 million and the CMRR Project at the Los Alamos National Laboratory (LANL) to \$156.0 million.

Last year, NNSA successfully executed one of the largest and most complex contract transitions in the history of the Department with the award of a contract to Consolidated Nuclear Security to operate and manage both the Pantex Plant and the Y-12 National Security Complex. The consolidated contract was written to require efficiencies and improved operations as a requirement for continued performance beyond the initial 5-year base period. This is a departure from other management and operating contracts where efficiencies and effectiveness are considered but are not mandatory.

Our Office of Secure Transportation (OST) provides safe, secure movement of nuclear weapons, special nuclear material, and weapon components to meet projected DOE, DOD, and other customer requirements. It continues to modernize assets by extending the life of the Safeguards Transporter and is currently looking at options for the next generation transporter, the Mobile Guardian Transporter. To meet an increasing workload, OST is planning a small increase in the number of Federal agents.

The primary mission of NNSA's Office of Defense Nuclear Security (DNS) and the Chief Security Officer is to develop and implement sound security programs to protect Special Nuclear Material (SNM), people, information, and facilities throughout the nuclear security enterprise. The NNSA's Defense Nuclear Security fiscal year 2016 request is \$632.9 million. The request manages risk among important competing needs even as NNSA continues to face the challenges associated with an aging physical security infrastructure that must be effectively addressed in the coming years. The request includes \$13 million to initiate installation of Argus at the Device Assembly Facility at the Nevada National Security Site. Argus is the enterprise security system for Category 1 SNM facilities that integrates access control, intrusion detection, and video assessment of alarms to protect and control high-consequence assets. DNS also has a prioritized list of smaller infrastructure upgrade projects it will execute as General Plant Projects within available O&M funding, for example, lighting systems supporting perimeter camera assessment, replacement and upgrades to Argus Field Processors, replacement of ported coax cables and buried cable electronics that will extend lifecycles and delay total system replacements. DNS initiated an Enterprise Vulnerability Assessment process across the enterprise with a focus on standardizing how vulnerability assessments are conducted and site protection strategies are formulated.

The Information Technology and Cybersecurity fiscal year 2016 request is \$157.6 million, a decrease of \$22.1 million or about 12.3 percent from fiscal year 2015 enacted levels. The difference is attributed to a one-time investment in fiscal year 2015 in the Infrastructure Program to implement a more secure classified computing environment. All activities related to the one-time increase were completed.

Information Technology and Cybersecurity supports the nuclear security enterprise. This work includes continuous monitoring and enterprise wireless and security technologies (i.e., identity, credential, and access management) to help meet security challenges. In fiscal year 2016, NNSA plans to complete the recapitalization of the Enterprise Secure Network, modernize the Cybersecurity infrastructure, implement the Identity Control and Access Management project at NNSA Headquarters and site elements, and implement and coordinate all Committee on National Security Systems and Public Key Infrastructure capabilities. In addition, we will leverage the NNSA Network Vision framework to increase the efficiency and cost-effectiveness of NNSA Information Technology (IT) services.

DEFENSE NUCLEAR NONPROLIFERATION APPROPRIATION

In fiscal year 2016, we have realigned the NNSA programs that continue to support the President's Prague Agenda to address the threat of nuclear proliferation and terrorism into the Defense Nuclear Nonproliferation (DNN) appropriation. NNSA's activities work across the spectrum to prevent, counter and respond to the threat of nuclear and radiological proliferation and terrorism. We work to prevent the acquisition of nuclear or radiological materials, technology, and expertise; we actively counter efforts to develop the materials and scientific knowledge needed to construct a nuclear threat device; and we are poised to respond to terrorist acts by searching for and rendering safe any such devices.

The Defense Nuclear Nonproliferation (DNN) account request is \$1.9 billion, an increase of \$325 million or about 20.1 percent from fiscal year 2015 enacted levels. At first glance, this figure looks like a very big increase but the number actually reflects a reorganization of our budget to include the Nuclear Counterterrorism Incident Response (NCTIR) and the Counterterrorism and Counterproliferation (CTCP) Programs from the Weapons Activities account. For comparability purposes, the DNN account increase is \$101.0 million or over 5 percent above fiscal year 2015 enacted levels. Additionally, we have combined the NCTIR and CTCP programs into a single budget program line to eliminate confusion about NNSA nuclear counterterrorism programs and activities. We also changed the NCTIR name to Nuclear Counterterrorism and Incident Response Program, reflecting this realignment. The DNN Appropriation will now support two enduring mission areas: (1) The Defense Nuclear Nonproliferation Program and (2) The Nuclear Counterterrorism and Incident Response Program. The Nuclear Nonproliferation Program is also restructuring to place more emphasis on capabilities as opposed to specific programs. This organizational restructuring is reflected in the DNN budget restructuring.

To achieve all of these mission objectives, NNSA has restructured the budget request under the Defense Nuclear Nonproliferation account as follows:

- Material Management and Minimization
- Global Material Security
- Nonproliferation and Arms Control
- Defense Nuclear Nonproliferation R&D
- Nonproliferation Construction
- Nuclear Counterterrorism and Incident Response Program.

Together, this restructuring aligns funding for preventing, countering, and responding to global nuclear dangers in one appropriation.

NONPROLIFERATION EFFORTS

The fiscal year 2016 request for the DNN Program, excluding NCTIR and Legacy Contractor Pensions, is \$1.6 billion, an increase of \$67.9 million or about 4.4 percent above fiscal year 2015 enacted levels. This past year was a big year for our nonproliferation efforts. Our Defense Nuclear Nonproliferation organization was responsible for many of the significant deliverables at the third Nuclear Security Summit held in The Hague last spring. Of particular note, Japan announced at the Summit that it would work with us to remove and dispose of all highly-enriched uranium (HEU) and separated plutonium from its Fast Critical Assembly. NNSA is currently working with its counterparts in Japan to resolve technical and logistical issues to complete this effort in a timely manner.

Also during the Summit, the United States joined 22 countries in signing up to a "Gift Basket" to secure all Category 1 radioactive sealed sources by 2016. In the United States, there are approximately 465 buildings with Category 1 devices. Of these, NNSA has completed security enhancements at 300 and is currently involved in a targeted outreach campaign to engage the remaining 165 buildings by the end of spring 2015.

And finally, NNSA partnered with five countries to remove 190 kg of HEU and plutonium from civilian facilities; which brings our cumulative total at the end of

fiscal year 2014 to an impressive 5,207 kg; this is more than enough material for 200 nuclear weapons. While relations with Russia are severely strained, we anticipate that we will continue to cooperate in efforts to repatriate Russian-origin weapons-usable HEU material to Russia.

The Material Management and Minimization (M3) program presents an integrated approach to addressing the persistent threat posed by nuclear materials through a full cycle of materials management and minimization efforts. Consistent with the priorities articulated in the National Security Strategy of the United States and the Nuclear Posture Review, the primary objective of the program is to achieve permanent threat reduction by minimizing and, when possible, eliminating weapons-usable nuclear material around the world. This program includes elements of the former Global Threat Reduction Initiative (GTRI) and Fissile Materials Disposition Programs. The fiscal year 2016 request for this program is \$311.6 million. For comparability purposes, the request reflects an increase of \$38.7 million or about a 14.2 percent increase above the fiscal year 2015 enacted levels. The funding increases are primarily for the removal of HEU from miniature neutron source reactors in Africa as well as preparatory activities for future shipments from Europe and Japan, which will proceed with appropriate cost-sharing.

The Global Material Security (GMS) program supports the President's nuclear and radiological security agenda and the Secretary's goal of enhancing nuclear security through nonproliferation. We work with partner countries to increase the security of vulnerable stockpiles of nuclear weapons, weapons-usable nuclear materials, and radiological materials, and to improve partner countries' abilities to deter, detect, and interdict illicit trafficking. Elements of the former GTRI program, International Material Protection and Cooperation (IMPC) program, and Nonproliferation and International Security (NIS) program are being combined in GMS, in order to better integrate capabilities required to support DNN's enduring mission. The fiscal year 2016 request for this program is \$426.8 million. For comparability purposes the request reflects a slight increase of \$2.5 million above the fiscal year 2015 enacted levels. This increase will accelerate the protection of International Atomic Energy Agency Category 1 radiological sources in order to meet the 2014 Nuclear Security Summit commitment to secure these sources by 2016.

The Nonproliferation and Arms Control (NPAC) program supports the President's nonproliferation agenda and NNSA efforts to prevent the proliferation or use of weapons of mass destruction by State and non-State actors. To carry out the goals of this program, we work with the International Atomic Energy Agency (IAEA) and foreign partners to build global capacity to safeguard nuclear materials and prevent illicit transfers of dual-use materials, equipment, technology and expertise. We also work with our partners and the IAEA to develop technologies and approaches to verify and monitor current and future arms control treaties and agreements. This funding also supports statutorily mandated activities such as technical reviews of export licenses and interdiction cases, and technical support for the negotiation and implementation of civil nuclear cooperation agreements (123 Agreements), as well as international export control outreach activities, and activities to support and improve the execution of the NPAC 10 CFR Part 810 application process. The fiscal year 2016 request for this program is \$126.7 million, and reflects a slight increase of \$0.8 million above the fiscal year 2015 enacted level.

The Defense Nuclear Nonproliferation Research and Development (DNN R&D) program supports innovative, unilateral and multi-lateral technical capabilities to detect, identify, and characterize: (1) foreign nuclear weapons programs, (2) illicit diversion of special nuclear materials, and (3) nuclear detonations. To meet national and Departmental nuclear security requirements, DNN R&D leverages the unique facilities and scientific skills of the Department of Energy, academia, and industry to perform research, including counterterrorism-related R&D. DNN R&D conducts technology demonstrations, and develops prototypes for integration into operational systems. The fiscal year 2016 request for this program is \$419.3 million, a \$25.9 million increase or about 6.6 percent above fiscal year 2015 levels. Increased funding is requested for nuclear and energetic materials characterization experiments and development of advanced diagnostic equipment capabilities, for long-range nuclear detonation detection, and technical forensics research. This increase over fiscal year 2015 levels is partially offset by a return to baseline funding for the Proliferation Detection subprogram after a one-time Congressional increase in fiscal year 2015 for test bed development and field experiments.

Nonproliferation Construction consolidates construction costs for DNN projects previously contained within each program budget. Currently, the MOX Fuel Fabrication Facility (MFFF) is the only project in this program. The fiscal year 2016 request for MFFF is \$345 million which is the same as the fiscal year 2015 enacted level. The National Defense Authorization Act for fiscal year 2015 and the Consoli-

dated and Further Continuing Appropriations Act for fiscal year 2015 directed the Department to conduct additional analyses of the MFFF construction project. These analyses will include independent cost and schedule estimates, and examination of alternative approaches for disposition of the 34 metric tons of weapon-grade plutonium and their relationship to the Plutonium Management Disposition Agreement (PMDA). The Department has requested Aerospace Corporation, a federally funded research and development center, to perform these analyses. They will be completed during fiscal year 2015, and will inform a final decision on the path forward. The fiscal year 2016 request emphasizes that while the Department continues to evaluate disposition paths (including the MFFF) to determine the most responsible path forward, any viable alternative will require a significant amount of funds to implement.

NUCLEAR COUNTERTERRORISM AND EMERGENCY RESPONSE

The fiscal year 2016 Request consolidates counterterrorism and emergency response funding into a single Nuclear Counterterrorism and Incident Response line in the amount of \$234.4 million.

Within NCTIR, the Nuclear Counterterrorism Assessment program represents the primary scientific program to assess the threat of nuclear terrorism and develop technical countermeasures against it. The knowledge generated under this program ensures that NNSA's technical expertise on nuclear threat devices informs DOD and FBI emergency response capabilities. We have taken steps to address funding reductions to the nuclear counterterrorism activities. Over the last 2 years these activities, formerly known as Counterterrorism and Counterproliferation within the Weapons Activities appropriation, have been funded at a level significantly below the requested amount—70 percent of the Request in fiscal year 2014 and 60 percent in fiscal year 2015. The fiscal year 2016 request would dedicate \$57.8M to Nuclear Counterterrorism Assessment in support of improvised nuclear device analysis. Additionally, the request includes funds within Defense Nuclear Nonproliferation R&D for materials characterization experiments and other research, which supports nuclear counterterrorism and incident response missions. Full funding of both lines will make it possible to continue NNSA's vital counterterrorism work at the national laboratories.

NCTIR continues to work domestically and around the world to improve preparedness and emergency response capabilities. Its expert scientific teams and equipment provide a technically trained, rapid response to nuclear or radiological incidents worldwide. NCTIR assesses nuclear or radiological threats and leverages that knowledge to provide contingency planning and training to support national and international counterterrorism and incident response capabilities. In 2014, NNSA's emergency response teams deployed more than 100 times in support of law enforcement and for major public events, such as the Super Bowl, and conducted five large-scale field exercises with partners from the FBI, DOD, and FEMA. In addition, they deployed over 70 times in support of DHS Domestic Nuclear Detection Office support to State and local first responders. Internationally, NNSA conducted 16 training courses to improve its foreign partners' emergency management capabilities and continued to work bilaterally with Israel, Vietnam, Cambodia, Thailand, Chile, China, Mexico, Argentina, Brazil, Taiwan, Canada, France, Jordan, the Nordic countries, Armenia and Kazakhstan. New programs were also started with Romania, Belarus and the Philippines. These initiatives represent our effort to create a truly global defense against the threat of nuclear terrorism.

NCTIR will also continue the initiative to equip cities with stabilization equipment and training, to ensure a prompt and effective response to nuclear terror threats.

NCTIR also executes the DOE's Emergency Management and Operations Support program that manages the Emergency Operations Centers, Emergency Communications Network, and Continuity Programs for all of DOE, including NNSA.

NAVAL REACTORS APPROPRIATION

Advancing Naval Nuclear Propulsion

During the past year, NNSA helped celebrate the 60th Anniversary of the USS NAUTILUS first getting underway on nuclear propulsion. The Naval Nuclear Propulsion program pioneered advances in nuclear reactor and warship design—such as improving reactor lifetimes, increasing submarine stealth, and reducing propulsion plant crewing. An example is the technology being developed by Naval Reactors that will enable the Ohio-Class Replacement submarine to be designed for a 40-plus year operational life without refueling, resulting in significant savings.

During 2014, Naval Reactors continued its record of operational excellence by providing the technical expertise required to resolve emergent issues in the Nation's nuclear-powered Fleet, enabling the Fleet to steam more 2 million miles. Through the work of its laboratory and highly skilled personnel, Naval Reactors also advanced the Ohio-Class Replacement and the S8G Prototype Refueling projects as well as initiating integrated testing of the lead A1B reactor plant for the next generation FORD-class aircraft carrier.

It is generally not well-known that if anything goes wrong with a reactor on one of the Navy's nuclear carriers or submarines while they are at sea, Naval Reactors' cadre of experts provide around-the-clock technical support, and can often resolve the problem and prevent the ship from having to return to port to be checked out and repaired— which would be quite costly and disruptive to the Navy's deployment schedules.

The budget request for Naval Reactors is \$1.4 billion, an increase of \$141.6 million, about 11.5 percent from the fiscal year 2015 enacted level. The request includes the base funding required to safely maintain, operate and oversee the Navy's 83 nuclear-powered warships, constituting over 45 percent of the Navy's major combatants. The increase supports three high priority activities: \$186.8 million to continue development of the advanced Ohio-Class Replacement reactor; \$133 million to continue preparations for the refueling and overhaul of the Land-Based Prototype reactor plant; and \$86 million to continue the design work of the Spent Fuel Handling Recapitalization Project started in fiscal year 2015. To this end, we would like to thank the Subcommittee's support for appropriating \$70 million for Spent Fuel Handling Recapitalization Project in the fiscal year 2015 enacted budget. These activities are essential to maintaining a credible sea-based strategic deterrent, to maintain the research and training capabilities of the Land-based Prototype, and to maintain the capability to safely inspect, store and package naval spent nuclear fuel.

NNSA FEDERAL SALARIES AND EXPENSES APPROPRIATION

NNSA Federal Salaries and Expenses (FSE) Request is \$402.7 million, essentially equal to the rate of operations in fiscal year 2015, but 8.9 percent above the fiscal year 2015 enacted level. The Request provides funding for 1,690 full-time equivalents (FTEs) and support expenses needed to meet mission requirements. We are actively engaged in hiring to that number in a thoughtful and strategic manner. I would note that the Request represents an increase of only \$1.5 million from the fiscal year 2015 planned execution level of \$401.2 million. This is due to the fact that the fiscal year 2015 enacted level was significantly below the request and we will need to use over \$30 million of planned carryover to sustain the currently projected operations of the NNSA Federal workforce. We built up that reserve through prudent planning and execution to enable us to pay for large one-time costs, such as the movement of much of our Federal workforce in Albuquerque into newer leased space. The increase includes a 1.3 percent cost of living adjustment and benefits escalation, additional support to stand up the Office of Cost Estimation and Program Evaluation (CEPE) office in accordance with Section 3112 of the fiscal year 2014 National Defense Authorization Act (NDAA), and funding to improve financial systems integration within the nuclear security enterprise in accordance with Section 3128 of the fiscal year 2014 NDAA.

In fiscal year 2016, NNSA will continue its on-going efforts to plan strategically to meet current and future workforce needs by analyzing how evolving missions are affecting job requirements. Reshaping of the workforce over the next several years will be essential, including obtaining both the right staffing size and skill sets. NNSA will also continue to identify efficiencies, particularly in travel and support services, to provide a lean and efficient organization and to support the President's Executive Order "Promoting Efficient Spending".

MANAGEMENT & PERFORMANCE

To enhance our ability to carry out our mission and execute this budget request, we will continue to focus on improving our project management and cost estimating capabilities. In keeping with the Secretary of Energy's increased focus on Management and Performance, the NNSA is committed to manage its operations, contracts and costs in an effective and efficient manner. The NNSA's Office of Acquisition and Project Management (APM) is driving continued improvement in contract and project management practices. APM is leading the NNSA's effort to deliver results by instituting rigorous analyses of alternatives, providing clear lines of authority and accountability for Federal and contractor program and project management, and improving cost and schedule performance. NNSA participates in the Secretary's

Project Management Risk Committee as a means to institutionalize and share best practices across the Department.

We have used strategic partnerships with the National Laboratories to rethink some of our most challenging projects. As a result of the Red Team review of the UPF at the Y-12 National Security Complex, led by the director of the Oak Ridge National Laboratory, and a similar approach to the Chemistry and Metallurgy Research Replacement (CMRR) Facility capability at Los Alamos National Laboratory, we are developing a disciplined, modular approach for both sites that will remove risks early in the process, and establish a well-defined cost and schedule, both of which were lacking in earlier efforts. This process will be an important and recurring project management theme at the NNSA and across the Department of Energy.

The CEPE was established in September 2014 pursuant to the fiscal year 2014 National Defense Authorization Act. This legislation recognized the effort to improve cost estimating that the NNSA had already started. The CEPE office is a prime example of actions taken to improve our cost estimation efforts. Forging a strong partnership with the Department of Defense (DOD) Office of Cost Assessment and Program Evaluation (CAPE), including joint training activities with CAPE, we have made good progress in establishing CEPE as an independent office. CEPE will provide independent cost estimating leadership, rigorous program analysis, and prudent fiscal guidance. Getting CEPE fully functional is a high priority for NNSA, and we will closely monitor its progress as it grows into its full potential over the next few years.

CONCLUSION

The NNSA executes vital missions to ensure nuclear security at home and abroad. We do this by delivering the technology, capabilities and infrastructure essential to a 21st century national security organization. Our workforce continues to rise to the challenge and deliver mission effective and cost efficient nuclear security solutions critical for the NNSA to succeed in today's fiscal climate.

In closing, I would also like to mention that the President's Budget Request is just the first in a series of documents slated for release this spring. The most important of those yet to be released is the NNSA Strategic Plan, last updated in May 2011. The goal of this document is to provide a single integrated guidepost for NNSA's leaders, our partners at the labs and plants, and Congress and our external stakeholders. The new strategic plan will articulate a clear direction and mission to everyone—no matter their rank or position. Also to be released is the Congressionally-mandated Stockpile Stewardship Management Plan (SSMP) which details NNSA's multi-year plan for delivering a safe, secure and effective nuclear stockpile. And for the first time, we plan to release a companion plan to the SSMP, tentatively titled, "Prevent, Counter and Respond" to address our plans for nonproliferation, counterterrorism and emergency response programs. Finally, a report is being prepared for Congress in response to the Final Report from the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise, co-chaired by Norm Augustine and Admiral Rich Mies.

Again, thank you for the opportunity to appear before you today.

URANIUM PROCESSING FACILITY

Senator ALEXANDER. Thank you, General Klotz. We will begin five-minute rounds of questions, and I'll begin.

General, I would like to start with questions in this round devoted to the uranium facility, where you're going tomorrow. Am I correct that you're able to carry appropriated funds over from 1 year to the next?

General KLOTZ. Yes, we are.

Senator ALEXANDER. On that facility. And one of the complaints we've sometimes had about inefficiency is that the jerky quality of the appropriations process sometimes cause wasted money, right?

General KLOTZ. It does.

Senator ALEXANDER. So having a sustainable flow of dollars based upon a plan can help save money as well by speeding things up and avoiding the jerkiness of the process.

General KLOTZ. You're absolutely right, Senator.

Senator ALEXANDER. The budget request for this year is \$430 million. What do you need that much money for this year?

General KLOTZ. Well, in the coming year, we will use this funding to develop the detailed design and safety analysis for the three principal facilities which we will ultimately construct. That's a mechanical and electrical building, it's a salvage and accountability building, and it's the main process building. It will also allow us to initiate the last phase of some site preparation activities, including large-scale excavation and backfill, in order to make the site ready to start facility constructing activities in fiscal year 2017.

Senator ALEXANDER. So it's all design and site preparation, is that correct?

General KLOTZ. Yes, sir.

Senator ALEXANDER. How—

General KLOTZ. Excuse me, Senator. There will also be some long lead procurement things for specialty equipment, like the specialized glove boxes that are necessary to work with net radioactive materials. Those are very highly complex pieces of equipment that require long lead times, so we need to begin the process of procuring those.

Senator ALEXANDER. When will the design of these buildings be 90 percent complete?

General KLOTZ. We expect, on the current schedule, for that to be during fiscal year 2017.

Senator ALEXANDER. And can you confirm that the designs of the uranium buildings will be 90 percent complete before the construction begins?

General KLOTZ. Yes. For those three facilities, which are the nuclear facilities associated—for the uranium processing facility, we will be 90 percent complete before we begin construction in accordance with our own Department of Energy orders, 413.3B to be precise, that we follow very carefully.

Senator ALEXANDER. So 2017 would be the date, the estimated date, for 90 percent design completion.

General KLOTZ. Yes, sir.

Senator ALEXANDER. And based on that date, will the buildings be completed on time to meet your commitment to be operational by 2025?

General KLOTZ. Yes, sir. It's still our intent to be on track to have this work done, be out of building 9212, which, as you know, is the oldest facility that we have there, by 2025, at a cap of \$6.5 billion.

Senator ALEXANDER. Well, that was going to be my last question. Are you still on track to finish the facility under the \$6.5 billion cost cap?

General KLOTZ. Yes, sir, we are.

Senator ALEXANDER. Well, I thank you for that. And Senator Feinstein and I have been pretty aggressive the last 2 or 3 years on that. And I appreciate the response of NNSA, its work, and that of the Red Team, because we basically have an agreement, as I understand it, that construction won't begin until we're 90 percent complete with design, and you said that is expected to be in 2017, that the buildings will be completed by 2025, and the budget cap is \$6.5 billion or less.

General KLOTZ. Yes, sir. But it's important that we continue to do some of the site preparation work that is already underway. In fact, one of the reasons for going to Oak Ridge tomorrow is to celebrate the completion of the first subproject that we had in terms of preparing the site for the construction of these three facilities. And in fact, we had budgeted \$65 million to do some road work associated with the vehicles that will have to come in and out of the construction site. We have done some grading. We've done potable water lines. And as I said, we budgeted \$65 million for that, and it came in significantly below that.

Our next step in this process, which we are ready to begin immediately, is to do what we call site infrastructure and services subproject. Again, these are the things that any large construction project would have to do. For instance, we will need to put a concrete batch plant on the facility, and a very unique concrete batch plant, because this has to pour nuclear qualified concrete. As any construction project, we'll need to build construction support buildings to house the people who are doing work there, which will ultimately be 1,700 construction people doing that. And we estimate that that will be a total of \$78 million for a total project cost for this particular aspect of the work. And as I said, we're ready to start immediately, and we expect to have that completed in the spring of 2018.

SAFETY

Senator ALEXANDER. Well, my time is up, but I'm going to ask this question, because it involves both Senator Feinstein and me. I celebrate any example of your coming in under budget. In multi-billion-dollar projects, even \$10 million is an encouraging sign to me. And I like the idea that there seems to be now clear accountability, someone's on the flagpole, for meeting the goals that we have. We use the example of the nuclear Navy. My staff reminded me that not only has the nuclear Navy not had a reactor accident resulting in a death, it hasn't had a reactor accident. Am I correct about that?

Admiral RICHARDSON. Yes, sir, that's true.

Senator ALEXANDER. Over 60 years. And a lot of that comes because Admiral Rickover, who I believe interviewed you as well, Mr. Richardson, is that——

Admiral RICHARDSON. Several times, Senator, yes, before I got it right.

Senator ALEXANDER. And he probably told you that, if you had a problem with a reactor, your career was over. Did he say something like that?

Admiral RICHARDSON. So that's a tenet of our program at every level. Yes, sir.

Senator ALEXANDER. So this accountability is important. So one question would be, we've had meetings, Senator Feinstein, with the accountability team at the uranium processing plant. I wanted to suggest that maybe a good schedule for that might be twice a year. We could do it more often, if you would like. And you might suggest to us when it would be useful, most useful to us and to you, to have just an informal meeting where we get an assurance that we're on time and on budget.

Senator FEINSTEIN. With the head of the project.

Senator ALEXANDER. With the head of the project. So will you think about that and suggest to us whether twice a year with the head of the project sounds about right? And if so, what times of the year would make the most sense?

General KLOTZ. Yes, sir. And thank you so much for that offer, because we have really benefited from your strong leadership, your insight, and your counsel, as we've moved forward through this over the last couple of years. So we will work with your staff and find the time.

I know you've got a very busy hearing schedule to finish. And we would like to get in sooner rather than later to do that. We're anxious to let you know the issues associated with this particular project, the successes as well as the challenges that lie before us. I think it's a good news story. As I said, we benefit from your counsel.

Senator ALEXANDER. Thank you. Senator Feinstein.

Senator FEINSTEIN. Thanks very much. I hope to cover two subjects in my 5 minutes. One is the hedge, and the second is a new nuclear cruise missile.

NUCLEAR WEAPONS STOCKPILE

I wrote an op-ed which was in the Washington Post on December 3 of last year on the hedge, and I just want to read a small part from it.

Of our stockpile of 4,804 weapons, only 1,600 are currently deployed, which means there are 3,204 backup weapons. We maintain this hedge in case of problems with the deployed weapons or if world events require additional deployments. Having reserve weapons may be smart policy, but maintaining two spares for each deployed weapon is excessive.

I would like your reaction to that, anyone on the panel, and I would like your assessment of what could be saved if the hedge were cut in half.

General KLOTZ. Let me, if I could Senator—thank you for the question—make a general statement, and then I'd like to pass it over to Dr. Cook, who has responsibility for all the weapons activities within NNSA, for a more refined answer than I'll be able to provide.

The whole objective of the campaign of life extension programs we have for the existing weapons is not only to sustain their life, but in the process, we will reduce the number of weapons which we feel is prudent to have in terms of hedge capabilities. That's the case with both the weapons that will go on the sea launch, ballistic missiles, as well as the gravity weapons we have. So that's part of our overall strategy, that as we prepare these weapons to be extended another couple of decades beyond which their original design life is, we are looking to reduce the overall size of the stockpile, the hedge requirements, but also the amount of special nuclear material that makes up the entire stockpile. Don.

Mr. COOK. Thank you very much for the question, Senator. It's important to realize that NNSA executes and NWC approved program, so they are partners in this. With regard to the hedge, it is, in fact, a technical hedge, as you described, and we are on a path

to get reductions through appropriate modernization via life extensions. That will give us increased confidence that we can reduce the hedge. These decisions are made within the entity that we work with on the DOD side.

To support what the administrator said, as a result of doing the W76 life extension, for example, by the time we conclude that, just a few years from now at the end of 2019, we will have reduced the number of W76s by a full factor of two. The 3 plus 2 strategy heads toward three ballistic systems, that's a reduction from four, and just two elements in the air carried leg, a modern gravity bomb, the B61 Mod 12, and the modern cruise missile, the W80-4.

Again, as the administrator said on a few more details, when we complete the B61 Mod 12, and we'll complete that in fiscal 2020, the time right now is March 2020, we will again have reduced the number of bombs by a factor of two. We will have reduced the special nuclear material by a larger amount than that, because we set the stage for the retirement of the B83-1, the last megaton gravity bomb in the American arsenal. As a result then, we've reduced the amount of special nuclear material in the bomb leg, by more than 80 percent.

So those are also key to having greater confidence in the ability of those systems to work. And as that is achieved, then the technical hedge will be reduced. As an example, we are ahead of by our dismantlement goals. We are able to take, as time goes on, more dismantlement work load beyond 2022, which is where we have it planned today.

Senator FEINSTEIN. I very much appreciate the fact, Dr. Cook, that you're looking at it.

Mr. Chairman, I'd like to have a classified briefing on that subject, because I have some questions about it, and maybe you'd like to join me.

Senator ALEXANDER. Well, I would join you. I read your op-ed, and those are very appropriate questions, important to our national security, and they cost a lot of money. And so I'd like to fully understand it, too, so why don't we schedule that?

Senator FEINSTEIN. That would be excellent. And include in it the B61 and the number of B61s we have.

NUCLEAR CRUISE MISSILE

The next question is, why do we need a new nuclear cruise missile? It's a \$186 million increase, I think, over the 2015 level of \$9 million, and the total cost runs \$7 billion to \$10 billion, and I know of no compelling case. So if there is one, maybe you could relate it to us.

General KLOTZ. Well, thank you, Senator. In the same Senate Armed Services Committee hearing that you referenced earlier, the one that The Nuclear Weapons Council Chairman, Frank Kendall, headed up, Admiral Cecil Haney, who is also the Commander of U.S. Strategic Command, made the case this way. The Air Force has had a cruise missile, the air-launched cruise missile, for some decades. That missile, the missile itself, not the warhead which we have responsibility for, but the missile itself, is starting to show the signs of age, and that is raising concerns about the long-term

reliability of the missile. There are also some aging concerns associated with the support equipment that's associated——

Senator FEINSTEIN. Could I stop you just for a minute?

General KLOTZ. Yes, ma'am.

Senator FEINSTEIN. How old is the missile when it begins to show age?

General KLOTZ. I'd have to get back to you on the specific life.

Senator FEINSTEIN. If you would, I'd appreciate it.

General KLOTZ. Yes, we'll get back.

Senator FEINSTEIN. Thank you.

General KLOTZ. Yes, we will talk to our friends in the Air Force about that. The other issue that Admiral Haney expressed concern about was increasing sophistication of air defenses across the world and making sure that we have an air-launched cruise missile capability that can deal with the types of threats—and again, we can include that in our classified discussion later.

We, at the NNSA, have a responsibility, obviously, for the warhead that would go on a new Air Force cruise missile, which they refer to as the Long-Range Standoff Capability System. So we have, this past year, made a selection that we would use a warhead from the family of warheads that the current air-launched cruise missile uses. We are on a path to have that first production unit of that particular warhead ready in 2027.

A decision was taken in the Nuclear Weapons Council, and subsequently at higher levels within the Executive Branch, that we ought to move the date for the first production unit of that warhead 2 years to the left, to 2025, based on what the military saw as a requirement for——

Senator FEINSTEIN. Is to the left, is that——

General KLOTZ. I'm sorry, 2 years earlier.

Senator FEINSTEIN. Thank you.

General KLOTZ. I apologize. And so that explains a significant portion of the increase in the money that we have requested for the warhead work, the life extension program that would support the Air Force's Long-Range Stand-off System.

Mr. COOK. If I could follow up. Because of 2014 has elapsed and the first production unit is moved up 2 years, in fact, today, we are 3 years shorter within the first production unit. What we learned on the W76 and the B61 programs was that we had funded tech maturation later in the life extension, and it should have been done earlier. In fact, GAO (Government Accounting Office) did a report on the life extension programs, and they especially——

Senator FEINSTEIN. Can I stop you?

Mr. COOK. Surely.

Senator FEINSTEIN. Tech maturation?

Mr. COOK. I'm sorry. Technology maturation for the componentry and all the elements of the system really means that they are mature enough to put into a committed life extension program. In other words, we've resolved all the difficulties, and we can confidently, on both the cost estimates——

Senator FEINSTEIN. Are you saying that came earlier than you thought?

Mr. COOK. No. We did it later in W76 and in the B61, and we paid for that through having to scramble later in the life extension

program. When the General Accountability Office reviewed those two LEP's and the three plus two strategy and where we're going, they suggested that we fund technology maturation efforts as early as we could. And so, in fact, just as you've said, while we had \$9 million in 2015 and we're in the first phase of a study to get the requirements right at 6/1, in July of this year, we moved to the analysis of alternatives and conceptual development.

Our earlier plan had been \$28 million for 2027 first production unit, but because that was moved up 2 years, we requested an additional \$167 million for a total of \$195 million.

Senator FEINSTEIN. Well, my number is wrong. I said \$186 million. It's \$195 million?

Mr. COOK. One hundred ninety-five million dollars, an increase from last year's FY NSP for year 2016 of \$167 million.

Senator FEINSTEIN. Big jump. Thank you.

Mr. COOK. Yes. Yes.

Senator FEINSTEIN. Thank you, Mr. Chairman.

Senator ALEXANDER. Sure. Thank you, Senator Feinstein. Very helpful. And we'll schedule that hearing. That would be helpful for both of us, I think.

NAVAL REACTORS—SPENT FUEL STORAGE

Let me shift gears, Admiral Richardson. Let's talk a little bit about Naval reactors. We talked two weeks ago, the big thing for you in this budget is a new facility to inspect and package that used nuclear fuel that comes to Idaho from the reactors. That's a subject that Senator Feinstein and I have a lot of interest in, is basically, you bring the fuel to Idaho, and you need a facility to put it into dry cask storage, and then the dry casks are stored temporarily in Idaho until a repository is open to which they can be transferred, is that correct?

Admiral RICHARDSON. Yes, sir, Senator. That's a very important facility for our program, as you said, because we take all of our spent fuel from all of the submarines and carriers and send it to Idaho in containers. And at that facility, we have sort of a shipping and receiving element, where we take the fuel from the ships, we bring it into a pool for radiological reasons, and we do processing of those cores in the pool, and then eventually transition the spent reactor cores into dry storage, where we store them there—

Senator ALEXANDER. How long are the rods typically in the pool?

Admiral RICHARDSON. It's an interesting question, because we're really sort of making up for time now as we move material through the pool and into dry storage. But we've got an agreement with the State of Idaho to make that process and do that transition in less than 6 years, and that's an executable program for us.

Senator ALEXANDER. You mean the material arrives, and within 6 years, it's in a dry cask, is that what you're saying?

Admiral RICHARDSON. Exactly. Yes, sir. We're processing a lot of legacy fuel, but that's a good number in terms of the capability of the system.

Senator ALEXANDER. You also have an agreement with the State of Idaho to remove all those dry casks by 2035, is that right?

Admiral RICHARDSON. Yes, sir. Our agreement with the State of Idaho really has sort of two fundamental elements to it. One in-

volves exactly what we just talked about, the throughput of the material through the pool and into dry storage, and we are committed to take that inventory that we have right now, the current inventory, and move all of that into dry storage by 2023. And then for the course that we receive after that, we have that 6 year commitment to move them through the pool and into dry storage in 6 years. So we will have eliminated our backlog by 2023, and be on that 6-year thing.

Senator ALEXANDER. So step one is to get everything into dry storage within 6 years.

Admiral RICHARDSON. Yes, sir.

Senator ALEXANDER. But then step two is to get it all out of Idaho, right?

Admiral RICHARDSON. Yes, sir.

Senator ALEXANDER. When is that supposed to be?

Admiral RICHARDSON. The second element of our commitment involves shipment to an eventual repository.

Senator ALEXANDER. Yes, well, where are you going to take it?

Admiral RICHARDSON. Sir, that remains to be seen.

Senator ALEXANDER. Yes. I had not understood, the relative amount of material is smaller than I thought. I mean, compared to the amount of the number—Senator Feinstein, I think you might be interested in this, too. The material we have from our commercial reactors is quite a bit of material. Sometimes, it's described as nearly enough to fill up Yucca Mountain. But the amount of material that goes into dry casks from our reactors is relatively small space, is that—how would you describe that?

Admiral RICHARDSON. Yes, sir. We have about 30 tons of heavy metal in Idaho right now of that type of material. That represents about—well, you have 60 percent of that right now in dry storage. The rest of it is moving through, as I said. That's about 180 naval cores in dry storage, and those are loaded into 110 casks. Those casks are ready for shipping when a repository or interim storage facility is ready. But in total, we estimate that that total inventory is really less than 1/10 of 1 percent of the Nation spent fuel.

Senator ALEXANDER. Yes, so 110 casks right now.

Admiral RICHARDSON. Yes, sir.

Senator ALEXANDER. You still need a permanent repository to store your fuel.

Admiral RICHARDSON. Senator, in order to meet our current commitments with the State of Idaho, we have to be ready to be among the earliest shipments to go when that repository is ready, and then all of our spent fuel that arrives by 2026 has got to be out of the State by the year 2035.

Senator ALEXANDER. And your dry casks can go to the same kind of repository that a dry cask could from a commercial reactors used fuel, is that right?

Admiral RICHARDSON. Yes, sir.

Senator ALEXANDER. It could go to Yucca Mountain or to one of the repositories that we're envisioning through the legislation Senator Feinstein and I are working on.

Admiral RICHARDSON. Yes, sir. We stay very engaged in those conversations with the aim of making our casks ready to be received by that facility.

Senator ALEXANDER. If there were a private repository, not operated by the Department of Energy but licensed by the Nuclear Regulatory Commission, that was willing to take your used fuel, would it be appropriate to use such a repository for that?

Admiral RICHARDSON. Sir, if it had the appropriate certifications and licensing, that would be potentially an option.

Senator ALEXANDER. Yes, there's one license today, but it's not usable. That's in Utah. But in our hearing with the Nuclear Regulatory commissioners last week, we heard about a proposed application from West Texas which would be a privately operated repository. First, it would have to be licensed by Nuclear Regulatory Commission. But theoretically, if it's licensed by the NRC, you don't think of a reason why you could not ship your dry casks there.

Admiral RICHARDSON. Yes, sir. As long as it's appropriately certified, nothing comes to mind that would prevent us from using a facility like that. Again, we would be engaged in the details of that decision.

Senator ALEXANDER. Senator Feinstein, I don't know if you've heard him say, the Navy's dry casks in Idaho are about 1/10 of 1 percent the size of the used fuel mass from the commercial reactors in the country. So it's not very much by space.

Admiral RICHARDSON. Yes, sir.

Senator ALEXANDER. Senator Feinstein and I see we're joined by the Senator from Oklahoma, and we'd be glad to put you in the rotation after Senator Feinstein if you'd like.

Senator FEINSTEIN. Thanks very much, Mr. Chairman. I wanted to spend a few minutes on the National Ignition Facility at Livermore.

NATIONAL IGNITION FACILITY

On February 6, I sent the Secretary a letter on the use of plutonium at the National Ignition Facility, seeking assurance regarding the necessity for such experiments and the safety precautions for workers and the public. I received the response yesterday, and I would like to put that letter, dated March 9, from Secretary Moniz into the record, Mr. Chairman.

[The information follows:]



The Secretary of Energy
Washington, DC 20585

March 9, 2015

The Honorable Dianne Feinstein
Ranking Member
Subcommittee on Energy and Water Development
Committee on Appropriations
United States Senate
Washington, DC 20510

Dear Senator Feinstein:

Thank you for your February 6 letter requesting information on the process leading to approval of the plutonium experiments at the National Ignition Facility (NIF), the necessity of these experiments, and the safety measures taken.

In his December 10, 2014 letter (enclosed) to the Subcommittee on Energy and Water Development, Dr. Donald Cook, Deputy Administrator for Defense Programs at the National Nuclear Security Administration (NNSA), outlined the scientific basis for these experiments and the details of the processes followed with regard to the safe execution of the experiments. Among the capabilities that the NIF brings to the Stockpile Stewardship Program is the ability to study materials compressed to extremely high pressures. No other platform can reach the pressures that the NIF can attain, and plutonium experiments in this regime are providing invaluable insights required to underpin the codes and models used to assess the performance and safety of our Nation's nuclear weapons stockpile.

Regarding the approval of these experiments, Dr. Donald Cook approved conducting plutonium experiments at the NIF after assessing myriad factors, including the technical benefits and technical risks, the risk assessment and risk management approach used by Lawrence Livermore National Laboratory (LLNL), and the incremental costs associated with these experiments. The Director of LLNL and his staff briefed the NNSA Administrator, Lt Gen (ret.) Klotz, and me on these matters, and we concurred with Dr. Cook's decision.

Safety is the highest concern at the Department of Energy. The NIF has many safety features to prevent impacts to the workers, public, and environment. All experiments are conducted consistent with all federal, state, and regional regulations. LLNL workers have been trained and extensive reviews were conducted to verify that the staff, procedures, and the safety systems were ready to proceed prior to the planned experiments. The amount of plutonium used in these experiments is very small. In the highly unlikely event of an accidental release, the exposure to an individual standing at the LLNL site boundary would be a small fraction (less than 0.005 percent) of the dose



that individual would receive on a flight from San Francisco to Washington, DC, and less than 0.03 percent of the dose that an individual would receive from a dental X-ray.

The first experiment was successful and provided data of previously unmatched quality. Plutonium experiments at the NIF have no impact on ignition-related experiments because plutonium experiments compete for facility-use time within a specifically partitioned set of dynamic materials experiments while ignition-related experiments have their own separate partition and separate set of requirements for facility configuration.

DOE recognizes that the public and elected officials have an interest in the progress of the scientific programs at the NIF. For this reason, briefings were conducted with congressional leaders and email notifications offering special briefings went out to many state and local interest groups.

I appreciate your ongoing support of our vital national security programs. If you have any questions or need additional information, please contact me or Mr. Joseph Levin, Associate Director of External Coordination, Office of the Chief Financial Officer, at (202) 586-3098.

Sincerely,



Ernest J. Moniz

Enclosure

Senator FEINSTEIN. Thank you very much. Let me quote from the letter. Among the capabilities that the NIF brings to stockpile stewardship, which is its primary mission, is the ability to study materials compressed to extremely high pressures. No other platform can reach the pressures that the NIF can attain, and plutonium experiments in this regime are providing invaluable insights required to underpin the codes and models used to assess the performance and safety of our Nation's nuclear weapons stockpile.

And then regarding the approval of these experiments, Dr. Donald Cook approved conducting plutonium experiments at the NIF after assessing myriad factors, including the technical benefits and technical risks, the risk assessment and risk management approach used by LLNL and the incremental costs associated with these experiments.

Now, I asked a question about safety, and that is the use of plutonium in that specific facility. And what the next paragraph states is that workers have been trained and extensive reviews were conducted to verify that the staff procedures and safety systems were ready to proceed prior to the planned experiments. And then it goes on to say, the amount of plutonium used in these experiments is very small. In the highly unlikely event of an accidental release, exposure to an individual standing at the site boundary would be a small fraction, less than .005 percent of the dose that individuals would receive on a flight from San Francisco to Washington, and

less than .03 percent of the dose that an individual would receive from a dental x-ray.

So I take you at your statement with respect to the safety aspects of this. I have been concerned about Livermore being able to reach its purpose. It's a very expensive facility. And I wanted to spend a moment to see what you could tell me and the chairman and the Senator about the likelihood of these experiments being successful.

Mr. COOK. Well, thank you for the question. It's very well stated. I appreciate your laying out the background that was in the exchange of letters on safety.

On the front of how well NIF is being used, there was, 2 years ago, an effort to broaden the base of the use of NIF comprehensively to the stockpile stewardship programs, that it was not solely devoted to an attempt at achieving ignition, and ignition and a drive toward it remains a core part of the program.

But we had years of experiments built up with regard to materials and the physics of nuclear weapons at the highest pressure regimes, as you said, because that understanding is the core research development, understanding that we need to avoid ever having to return to underground testing. So for example, today, more than half of the experiments are devoted to a broad class of stockpile stewardship and less than half to ignition, but progress has been made on all fronts. If you have a second question, I'd be happy to entertain it.

Senator FEINSTEIN. Yes, a second question would be, you sort of moved over ignition pretty carefully and quickly, but my understanding is that the strategies in place, and I understand this is all pioneering work, that the strategies in place to achieve ignition simply didn't work. And when I talked to the people out there, what they said is they were going back to basics, and they were going to come up with another strategy. I gather that has not been possible, is that correct?

Mr. COOK. I believe that you got correct information from the lab. And so what was done in the early years was testing and basically an empirical change of parameters to see whether ignition could be achieved in the very earliest years. That could not be achieved. So, in fact, the lab did what it's good at. It went back to basics, fundamental science, and found, as they knew and had learned, that the model predictions, the computations, were not reflective of reality. It isn't that they were wrong codes. It's that an insufficient amount of physics had been put in.

When that was in, then there was a drive toward improvement of the conditions for an ignition. And in fact, Livermore did achieve the point where, in the fusion fuel in the center of a capsule, more fusion energy was produced than the thermal energy that actually went into the compression of the very spot. This is still short of ignition by quite a bit, almost a factor of 100 in the number of neutrons produced. But there is, in parallel with the other stewardship experiments, a solid commitment to ignition. Step-by-step progress is being made, and we get regular reports on that.

Senator FEINSTEIN. Just one thing. So you're telling me that there still is going to be an effort to achieve ignition.

Mr. COOK. There is absolutely an effort to achieve ignition ongoing right now.

Senator FEINSTEIN. And that has not been dropped?

Mr. COOK. No, it has not.

Senator FEINSTEIN. Okay. Thank you.

Senator ALEXANDER. Senator Lankford.

GOVERNMENT ACCOUNTING OFFICE HIGH RISK LIST

Senator LANKFORD. Thank you, Mr. Chairman. I appreciate you all being here. And I want to say what I know has already been said as well, thank you for the work that you do. You do quiet work that defends our Nation every day, and hardly anyone pays attention to you, because you're doing your work well. And so I appreciate what you're doing every day to be able to protect the Nation and for what you have done for a long time in that.

Let me ask a couple of general questions on some things. I know you're very aware of the GAO high risk list. The issue on the high risk list has been cost estimates. You deal with very difficult processes here. But the challenge is, GAO has determined some of the projects that go all the way back to 1997, like the Savannah River project, that have far exceeded the original estimates and the time here.

The concern is initially two things. One is, we have to live and breathe based on cost estimates and what we think something is going to cost, and we have to know we have a reliable estimate coming to us. Second is, the GAO statement is a little disconcerting.

They made this comment in their report. Since the project began in 1997, the estimated cost of the project has increased by more than \$6.3 billion. The schedule has been delayed by about 15 years. They stated, we found that, among other things, NNSA had not analyzed the root causes of the construction cost increases to help identify lessons learned and to help address the agency's difficulty in completing projects within cost and on schedule. They also mentioned in another spot that there was a question that they had about the sense of urgency in setting timelines to get some things completed to even determine how this gets resolved.

So my question is, for the future, we've got to get good estimates. I know you want to get good estimates. What is in process right now, and when will that be done to make sure that the lessons learned can be implemented?

General KLOTZ. Now, thank you, Senator, for that question. And of course, one of the key objectives of Secretary Moniz and of the current leadership of NNSA is to increase our skills and our success in terms of doing the basics of large capital construction projects that begin with good cost estimates, a very rigorous process by which we identify the requirements that we actually need, and assessment of alternatives for satisfying those requirements.

We started to have some success in a couple of areas. For the last 2 to 3 years, we have been off the GAO's list, high risk list, for projects under \$750 million. And earlier we were discussing how a couple of those smaller projects have been delivered actually early and under cost, which tells us that the investment that we're

making in terms of talent, expertise, and experience in the area of large project management is beginning to yield some results.

We still have three projects that are on the high risk list, the GAO's high risk list, the uranium processing facility at Oak Ridge, the replacement for the chemical and metallurgical building in Los Alamos, and the MO_x Fuel Fabrication Facility in Savannah River. On the first two, we have adopted a fundamentally different approach about how we are going to construct these projects that is a mix of repurposing existing facilities, changing the processes within those facilities, and whether we do it more efficiently, more effectively, and instead of building one big box building, segregating work by the security requirements as well as the safety or hazard requirements associated with that building.

We're a little more constrained by what we can do, and were pursuing that in both of those, and I think with very promising potential. We're little more constrained on the MO_x Fuel Fabrication Facility in Savannah River, because the outside of the building has essentially been constructed, so the freedom or design space that we have to affect that is constrained.

Senator LANKFORD. So give me the top lesson learned here and the thing that's going to be fixed in the timeframe on that. So you mentioned several things there, as far as, it sounds like, changing the way you do your contracting on the smaller projects. Is that being implemented in the larger programs for the future? And then I have one other follow up question, if the Chairman will allow me another minute, as well.

General KLOTZ. It is. Making sure that you have people who actually know about the art and science of large project construction, which were doing, hiring—

Senator LANKFORD. Most of the issues due to changes as you went through it, or most of the issues were the initial contract didn't understand completely what they were about to do?

General KLOTZ. I think most of it had to do with locking in a cost estimate before we had gotten to the 90 percent design level. There's a lot of pressure as soon as we conceive of our project to come up with a number. People want to know how much it's going to cost. I think we have to be very, very disciplined and make sure we have gone through that rigorous cost estimating, analysis of alternatives, early design to ensure that the cost estimate that we are planning on and that we are communicating with Congress is, in fact, a realistic one.

Senator LANKFORD. Right. The request for funding for this next year's a little over 10 percent increase in funding, obviously exceeds the budget caps and all that conversation that's already happened somewhat here. The question that I have is, how much of that money is related to some of these cost overruns that we're now going to get on top of for some of these big projects and call them done, so were not going to have those same costs added, let's say, 5 years from now, so were still catching up to some of the bad estimates from before, and how much of them are just operational expenses?

General KLOTZ. I would like to get back with you on the detail. I don't know that I've quite parsed it out that way. The request that we have this year is based on what our current estimates are,

which we feel fairly confident about, more confident that we could have said we were 2 or 3 years ago in terms of the cost estimate.

Senator LANKFORD. Right.

General KLOTZ. And a lot of that depends, of course, on level and consistent funding, because as you move the costs out further, it will cost more.

Senator LANKFORD. It costs more. I understand that.

General KLOTZ. Yes, sir.

Senator LANKFORD. But I'm just trying to figure out the breakdown here, how much of that is still catching up to bad estimates from before, and how much of that is we're ahead of it now, and our estimating better in new projects and new tasks?

General KLOTZ. I'd like to ponder that question and get back to you on that.

Senator LANKFORD. Thank you.

General KLOTZ. Thanks.

Senator LANKFORD. Mr. Chairman, I yield back. Thank you.

Senator ALEXANDER. Thank you, Senator Lankford. Senator Feinstein.

MO_x

Senator FEINSTEIN. Thanks very much. I wanted to ask about the mixed oxide fuel fabrication facility. And I think both the chairman and I remain very concerned about the costs and the schedule of the MO_x facility. Now, this started out costing \$4 billion and being complete in 2016. It's now expected to cost as much as \$13 billion and not be ready until the late 2020s. Now, we've been into this to a great extent I think. We know that this is a treaty obligation, that the Russians are building a fast reactor to deal with it and that they are further behind than we are, at least that's the information that I have. The goal of disposing of weapons grade plutonium is certainly worthy, but the cost is enormous.

Last year when we did this, we saw there were no alternatives, and that's one of the reasons why we continue to fund it. So my question is this. And I guess Ms. Harrington, it's for you. Where is the Department in evaluating alternatives to MO_x, or have you given up? General, whatever, you're the boss man.

General KLOTZ. Let me go ahead and start, but I'd love to give Ms. Harrington an opportunity, because she lives with this every day. You're right. We are still, as an Administration, committed to the plutonium management and disposition agreement. This is an agreement, as you indicated, between us and Russia, each of us to dispose of 34 metric tons of weapons grade plutonium. This is a key objective that we have. And the approach that we have adopted was to pursue a production facility in Savannah River that would use this excess weapons grade plutonium, mix it with uranium to produce a fuel, mixed oxide, that could be burned in simple nuclear reactors. So we've started on that project.

I recall my first hearing with this Congress was before this Committee the day we had released a report from the Department of Energy posted on the NNSA Web site that laid out five different potential options for what we could potentially pursue that needed to have greater fidelity and greater costing. At the time, the Administration had proposed the notion of putting the MO_x Fuel Fab-

rication project into cold standby. The Congress had different views. We were instructed to continue construction for 2014. And in the fiscal year 2015 Appropriations Act, our request for \$221 million was up to \$345 million, and we were told to continue to construct through fiscal year 2015, which we are doing.

So at the same time, the Congress asked us to do two reports by an external federally funded research and development corporation to give us and you independent cost estimates of various options. The first of those reports, which will identify two options, continuing with MO_x Fuel Fabrication Facility construction, and the other one, which we call dilution and disposal, is due in mid-April. And I believe the federally funded research and development corporation that we have asked to do that is on track to do that. The second one, which will identify a broader range of options, is due in mid-September.

So as we build the budget request for fiscal year 2017, we will continue the process of dialoguing with Congress on the way forward, and we will have greater fidelity in terms of the out year funding as it relates to MO_x. Now, have I left anything out?

Senator FEINSTEIN. Before you leave, so is the commitment to stay with MO_x?

General KLOTZ. The commitment through this year, as required, is to continue construction with the MO_x Fuel Fabrication Facility with the funds that were enacted in 2015, and we're doing that. Construction continues to go on. The Secretary has been down there, along with members of the South Carolina congressional delegation. I've been down there twice. Our principal deputy assistant was down there yesterday. Our deputy secretary has been there. This is a project which is very, very high in our radar scope in terms of watching how it proceeds.

Senator FEINSTEIN. Can the \$345 million be spent? What if you decide to do something else?

General KLOTZ. Well, we can execute the \$345 million. I will tell you what Secretary Moniz has said publicly. This is not optimal funding rate for construction of a large project like this, but there is meaningful work that is being done in terms of constructing this facility as we speak.

Senator FEINSTEIN. Thank you.

Ms. HARRINGTON. The only thing I would go back to, Senator, is the point you made that the up-and-down cycles of funding are very disruptive to these kinds of projects. They make them very difficult to manage. They make them almost impossible to plan in a rational way, which is why we chose the \$345 million number. It would provide consistency across several years and predictability in terms of the scope of construction that could be achieved during that period. So I think there is a strong rationale for why we put that particular number in the budget.

Senator FEINSTEIN. It's just from my perspective. I don't want to see us look back on this as we have looked back on one other project and say, well \$600 million has been wasted. So I think it's really a hard problem for you all.

General KLOTZ. It is. And again, we're hoping that the external look, as required by and requested by Congress, will give us a more

solid grounding in terms of the specific cost estimates associated with the various alternatives.

Senator FEINSTEIN. I hope so. Thank you. Thank you, Mr. Chairman.

Senator ALEXANDER. Thank you, Senator Feinstein. General, in the report, which is due April 16, do you plan to recommend the lowest cost solution?

General KLOTZ. Again, Senator. I think we want to wait and see what the report says and then engage, as we have, in dialogue with members of Congress in terms of how best to proceed.

Senator ALEXANDER. Have you learned anything from the Red Team review of the uranium project that you can apply to the MO_x and the plutonium project in Los Alamos? I know they are different sorts of projects, but any lessons there? Because the Red Team review seemed to be helpful and coming to the current much better management situation it seems that you have with the uranium project.

General KLOTZ. Yes, sir. On one level, yes. One of the things that we did in response to the Red Team recommendations was to strengthen our oversight of both programs and projects within the NNSA and within the Department of Energy at large and establishing a program manager for not only uranium and plutonium and tritium, but also for the construction of—or for how we dispose of weapons grade plutonium.

So we have stronger management oversight. But as I've suggested to the Senator from Oklahoma, there, the facility, the superstructure for the building, is essentially up. So some of the things that we have adopted from the Red Team report in terms of segregating work, dividing up hazard and the security criteria into different facilities with varying cost per square footage, are just not possible as far as the MO_x Fuel Fabrication Facility at this stage in the project.

Senator ALEXANDER. One of the recommendations, I believe, in the Red Team review was that it be a continuous sort of review, that the Red Team not just go home, but every 6 months or every year, it would do the same kind of thing, because it's a big project, and there are bound to be surprises and changes and alterations. Am I right about that? Is that planned?

General KLOTZ. That's right. In fact, we've already had our first review late last year in that, and we will run them at roughly 6-month intervals to do that. And indeed, we're doing that across NNSA on other projects, but also across the Department of Energy.

One of the things that came out towards the end of last year was a directive from Secretary of Energy Moniz for large projects that there be a continuous process internally and that there be a periodic process independent of what goes on inside the Department of Energy or NNSA with experts to review and question, probe how we are proceeding on these large projects.

Senator ALEXANDER. Well, I have no other questions. I'm encouraged by that. I think the combination of the kind of accountability that Naval Reactors have for their reactors and this sort of continuous review, and an agreement with the Congress about a time schedule, a budget, and that we don't build until we have 90 percent of the design complete, I think the combination of all those

things has made some good progress in terms of these big construction projects. And so, we'll continue with that.

I don't have any other questions. Senator Lankford, do you have any other questions?

NUCLEAR NONPROLIFERATION

Senator LANKFORD. I have one other quick question. It deals with the defense nuclear nonproliferation appropriation. The request obviously goes up significantly. That's the combining of several different programs behind the scenes on that. The question is, talk me through the several million dollars in the process of combining those two and why you think this will be more effective. So why does the cost justify it, basically?

Ms. HARRINGTON. Thank you for that question, Senator. We took a long time to look at this restructuring. When we look at the mission that we have to meet going forward and we project over the horizon, and we've been doing studies along this line for the past 2 plus years, trying to look at how the evolving threat environment affects our implementation of mission. The counterterrorism counter proliferation and the counterterrorism incident response programs formerly were in the weapons account, but they worked with the nuclear nonproliferation programs. That is the sweet spot for these programs to work together, because much of the drive behind the nonproliferation programs is, in fact, counterterrorism.

So by pulling those programs out of the weapons account, it leaves Dr. Cook with a clear pathway toward managing the stockpile and focusing on that particular very important mission, and it leaves the defense nuclear nonproliferation appropriation covering the whole spectrum of prevent, counter, and respond, as the administrator mentioned earlier. You will hear this a lot from us, because this is a very important continuum for addressing the threats that we currently encounter in the world.

So for us, we currently, already, co-plan, co-train, co-execute with those offices. Pulling them together into one appropriation simply increases the opportunity for synergy, increases the opportunity for efficiencies, for joint planning, which is something that we have been encouraged to do.

Senator LANKFORD. No. I understand that, and that's great. And the structure of it, you're right, make sense, and I'm sure it's one of those things for several years everyone has looked at and said, why are they over there, why are they doing that. Part of my question is, why is it \$100 million to make that transition and that restructuring?

Ms. HARRINGTON. It simply moves the funding that used to be in the weapons account into the nonproliferation appropriation.

Senator LANKFORD. And so it has \$100 million decrease in the weapons account as well to be able to offset that? It looks like it's going up but going up in both areas. We are not seeing a decrease in one area and an increase in another.

General KLOTZ. Well, it's largely a transfer out of one budget category into another budget category. But there is increase in the defense nuclear nonproliferation account. If you subtract out the money that was the transfer from counterterrorism and incident response, we still show about a 4.4 percent increase in what one

might call sort of core nuclear nonproliferation activities which span the range of trying to lock down special nuclear materials across the globe, reduce dependence of commercial activities and universities on highly enriched uranium, enhancing border crossings to prevent smuggling of special nuclear materials, that whole range of work continues. As Senator Feinstein noted in her opening match for marks, it's showing an increase.

Senator LANKFORD. Incredibly valuable. I guess what I am trying to figure out is, what part would have had a request for increase before, regardless of where they're stationed, and what part is the relocation cost? That's what I'm trying to find out.

General KLOTZ. It's just an accounting. It's an accounting shift from one part of the ledger to another part of the ledger. There may be some increases, and will get back to you with specific things that we're doing. In counterterrorism we have to work very closely with State and local responders on emergency communications, on training. There, quite frankly, is a high demand for NNSA, Department of Energy services, by other domestic agencies that might have to respond, God forbid, to a terrorist threat or incident in the United States. We do a lot of training with them. We do a lot of back-and-forth on particular types of equipment and capability that are necessary to do that.

And we also do that, quite frankly, with foreign partners as well. As the interest in civil nuclear power goes up across the world, there are going to be more and more countries that have to deal with the safety and security issues associated with nuclear materials, and we have deep expertise and experience in this area that fits into this prevent, counter, and respond spectrum that Ms. Harrington mentioned.

Senator LANKFORD. Right.

Ms. HARRINGTON. Senator, I do have all the precise numbers, the comparisons between 2015 and 2016. In the counterterrorism and incident response areas, very, very modest. It's about a \$10 million increase over last year to account for a significant drop in the counterterrorism, counter proliferation budget that resulted from the Congressional action. We felt strongly about restoring part of that. Some of that is for work on standoff disablement. If, God forbid, we were ever to have to encounter a trafficked nuclear weapon or an improvised nuclear weapon, how could we safely manage it? That is the kind of research that this will restore.

Senator LANKFORD. Thank you.

Senator ALEXANDER. Senator Feinstein.

Senator FEINSTEIN. Thank you very much, Mr. Chairman. Mr. Chairman, you began the hearing by asking Admiral Richardson about the 60 year safety record of the nuclear program of the Navy, of which we are all very proud, and he escaped any questions. So I don't want him to feel lonely or unappreciated or leave here.

Senator ALEXANDER. Ask him a few. Ask him a few.

NAVAL REACTORS

Senator FEINSTEIN. Okay. I will ask him a few. You mention in your statement, which I have read, about highlights of operations, that they include the nuclear powered aircraft carrier, the George Bush CVN 77, the only coalition strike option in the fight against

ISIL militants, for 54 days executing 20 to 30 sorties each day. Can you talk a little bit about that, because this, to me, it's kind of present action, and I would be very interested in knowing how it went, what broke down, what was imprecise, what was very precise? Can you summarize it in an unclassified setting for us?

Admiral RICHARDSON. I'm sorry, ma'am, the details of the strikes themselves?

Senator FEINSTEIN. No, what you can say. If you did 20 to 30 sorties a day, I assume those were strikes?

Admiral RICHARDSON. They were, ma'am. I would have to get back to but the details on that. Our contribution to that was really providing the technical support to keep the carrier on station. And so that's one of the primary functions of my technical support base is to support today's fleet operations, and so the response of that team to respond to really a continuous stream of technical requests and that sort of thing.

Senator FEINSTEIN. Talk about the continuous stream of technical requests with an ongoing mission of 20 to 30 sorties a day.

Admiral RICHARDSON. Right. And so, as you know, we are primarily focused on continuity of power. It's our desire to provide safe and effective reliable propulsion and power to the aircraft carrier. And so as they work through their day to day operations, technical issues come up. We respond to fleet requests for help. We get about 12 of those per day from the entire nuclear powered fleet. And so that is a major part of our business and a significant portion of our budget request.

Some of the more significant accomplishments of that technical base just this year alone could be directly attributable to recovering literally 30 to 40 submarine and aircraft carrier years of operation, as they resolve technical issues, allowing those nuclear powered warships to continue to execute their operations in support of the Nation's interests around the world.

And if that capability did not exist, very, very talented people supported by the appropriate facilities and equipment, we would have to potentially pull those submarines and aircraft carriers in and shut them down pending resolution. It's the responsiveness of our team that allows them to remain on station, to continue and to strike, or do whatever job they do.

General KLOTZ. Could I add something to that, Senator.

Senator FEINSTEIN. Certainly.

General KLOTZ. And I say this—

Senator FEINSTEIN. And if you would touch on the funding request, which is \$1.375 billion, and that's an 11 percent increase of \$136 million.

General KLOTZ. Sure. And I say this as a retired career Air Force officer, that our Naval Reactors does extraordinarily important work in the day-to-day operation of the U.S. Navy. And one of the challenges that has happened over the last couple of years since I've been in this seat, is a significant reduction in the request of the Naval Reactors portion of the budget, largely what we might call infrastructure or the base.

There's a lot of focus on the new reactor for the Ohio replacement submarine or the new reactor for an aircraft carrier, the research and development that they're doing. But often what gets overlooked

is that day to day operation that allows the fleet to stay at sea rather than having to go back to a port and fix it. So the allocation is extraordinarily important so that we can continue to provide that kind of support to the U.S. Navy as it carries out its global mission.

Admiral RICHARDSON. Thank you, General. And so just to describe our budget request, a majority of that request goes to fund that technical support base at our labs and other operating sites, to support not only today's nuclear fleet as we have described, but also to operate the prototype reactors which have a dual function, a research and development function, that is the technical work that goes to de-risk the new reactor core that we are going to put in the replacement for the Ohio class, as well, the other purpose for those reactors is a training function, where we train about 3,000 sailors, about 1,000 of those coming through our Department of Energy facility in New York each year, and so there is this continuous stream of operators to the fleet.

So the majority of that base funding goes to support those people, really world-class technical base to get through the technical issues, as well as there is operating and maintenance of those prototype reactors, the spent fuel facility, Mr. Chairman, that we talked about earlier, just to maintain those facilities operating, dually required periodic and corrective maintenance to keep those facilities operating.

And as the general said, in the past 5 years, those facilities have been appropriated to about \$550 million less than the request, and we're trying to get back up on our plan to stop backlogging maintenance on those facilities. So those are the fundamental elements of our request in the base. And then, ma'am, I know you're very conversant on the three projects, the Ohio class replacement reactor, the refueling that the general mentioned, and then the spent fuel facility Idaho that we talked about earlier.

Senator FEINSTEIN. Thank you very much, Admiral. Appreciate it.

Admiral RICHARDSON. Yes, ma'am.

Senator ALEXANDER. Thanks, Senator Feinstein. I have no other questions. Senator Lankford, do you have other questions?

Senator LANKFORD. No.

Senator ALEXANDER. Well, thank you very much for this. In summary, I'm encouraged based upon where we were 2 to 3 years ago in terms of the big projects. And I would like to continue to have our regular review of those things, so General Klotz, if you could suggest to us. I'd like to ask you to pick the times that make the most sense. I mean, if you're going to have a Red Team review every 6 months, or if there is a budget event coming, let's have the review—we don't want to make work. We like to have a review at a logical time where you have something to tell us and where we can ask questions. I'm guessing spring and fall are a couple of good times. But think about that, working with our staff, and then Senator Feinstein and I will be available to you.

The hearing record will remain open for 10 days. Members may submit additional information or questions for the record if they would like.

SUBCOMMITTEE RECESS

Senator ALEXANDER. This subcommittee requests all responses to questions for the record be provided within 30 days of receipt. Thank you for being here today. This subcommittee is adjourned.

[Whereupon, at 10:30 a.m., Wednesday, March 11, the subcommittee was recessed, to reconvene subject to the call of the Chair.]